## SEQUENCE LISTING

## SEQUENCE LISTING

- (1) GENERAL INFORMATION:
  - (iii) NUMBER OF SEQUENCES: 23
- (2) INFORMATION FOR SEQ ID NO:1:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag PolI for
    - (B) LOCATION:
    - (D) OTHER INFORMATION: Used to amplify full-length Tag Pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

## Tag Pol I forward

5'-qc qaattc atqaggggga tgctgccct ctttgagccc-3'

- (2) INFORMATION FOR SEQ ID NO:2:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag Pol I rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: Used to amplify full-length Taq Pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

## Tag Pol I reverse

5'-gc gaattc accetecttgg cggagcgc cagtectecc-3'

- (2) INFORMATION FOR SEQ ID NO:3:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I A293\_trunk
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to amplify truncated form of *Taq* DNA pol I coding sequence
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Taq Pol I\_A293\_trunk
5'-aatccatgggccctggaggaggc ccctggccccgc-3'

- (2) INFORMATION FOR SEQ ID NO:4:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Ala643Cys\_fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into *Taq* DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Alanine 643 to Cysteine Replacement

Taq Pol I\_Ala643Cys\_fwd
5'-C CAC ACG GAG ACC tgC AGC TGG ATG TTC GGC G-3'

- (2) INFORMATION FOR SEQ ID NO:5:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Ala643Cys rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Taq Pol I\_Ala643Cys\_rev
5'-C GCC GAA CAT CCA CGA Gca GGT CTC CGT GTG G-3'

- (2) INFORMATION FOR SEQ ID NO:6:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Phe647Cys fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Phenylalanine 647 to Cysteine Replacement

Taq Pol I\_Phe647Cys\_fwd
5'-CC GCC AGC TGG ATG TgC GGC GTC CCC CGG GAG GCC-3'

- (2) INFORMATION FOR SEQ ID NO:7:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 1119 bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Phe647Cys rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: pro used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Taq Pol I\_Phe647Cys\_rev
5'-GGC CTC CCG GGG GAC GCC GcA CAT CCA CGT GGC GG-3'

- (2) INFORMATION FOR SEQ ID NO:8:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Val649Cys\_fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Valine 649 to Cysteine Replacement

Taq Pol I\_Val649Cys\_fwd
5'-GCC AGC TGG ATG TTC GGC tgC CCC CGG GAG GCC GTG G-3'

- (2) INFORMATION FOR SEQ ID NO:9:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Val649Cys\_rev
    - (B) LOCATION:

- (D) OTHER INFORMATION: used to introduce cys mutation into *Taq* DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Taq Pol I\_Val649Cys\_rev
5'-C CAC GGC CTC CCG GGG Gca GCC GAA CAT CCA GCT GGC-3'

- (2) INFORMATION FOR SEQ ID NO:10:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Glu652Cys fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Glutamic Acid 652 to Cysteine Replacement

Taq Pol I\_Glu652Cys\_fwd
5'-GGC GTC CCC CGG tgc GCC GTG GAC CCC CTG ATG CGC-3'

- (2) INFORMATION FOR SEQ ID NO:11:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq PolI Glu652Cys\_rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Taq PolI\_Glu652Cys\_rev
5'-GCG CAT CAG GGG GTC CAC GGC gca CCG GGG GAC GCC-3'

- (2) INFORMATION FOR SEQ ID NO:12:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Ala653Cys\_fwd

- (B) LOCATION:
- (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Alanine 653 to Cysteine Replacement

Taq Pol I\_Ala653Cys\_fwd
5'-GGC GTC CCC CGG GAG tgC GTG GAC CCC CTG ATG CGC-3'

- (2) INFORMATION FOR SEQ ID NO:13:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag Pol I Ala653Cys\_rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Taq Pol I\_Ala653Cys\_rev
5'-GCG CAT CAG GGG GTC CAC Gca CTC CCG GGG GAC GCC-3'

- (2) INFORMATION FOR SEQ ID NO:14:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Val654Cys\_fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cysmutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Valine 654 to Cysteine Replacement

Taq Pol I\_Val654Cys\_fwd
5'-GTC CCC CGG GAG GCC tgt GAC CCC CTG ATG CGC-3'

- (2) INFORMATION FOR SEQ ID NO:15:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA

- (ix) FEATURE:
  - (A) NAME/KEY: Taq PolI\_Val654Cys rev
  - (B) LOCATION:
  - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Taq PolI\_Val654Cys\_rev
5'-GCG CAT CAG GGG GTC aca GGC CTC CCG GGG GAC-3'

- (2) INFORMATION FOR SEQ ID NO:16:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag Pol I D655C fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Aspartic Acid 655 to Cysteine Replacement

Taq Pol I\_D655C\_fwd
5'-CCC CGG GAG GCC GTG tgC CCC CTG ATG CGC CGG-3'

- (2) INFORMATION FOR SEQ ID NO:17:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag Pol I D655C rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Taq Pol I\_D655C\_rev
5'-CCG GCG CAT CAG GGG Gca CAC GGC CTC CCG GGG-3'

- (2) INFORMATION FOR SEQ ID NO:18:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: Synthetic DNA
- (ix) FEATURE:
  - (A) NAME/KEY: Taq Pol I Pro656Cys fwd
  - (B) LOCATION:
  - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Proline 656 to Cysteine Replacement

Taq Pol I\_Pro656Cys\_fwd
5'-CGG GAG GCC GTG GAC tgC CTG ATG CGC CGG GCG-3'

- (2) INFORMATION FOR SEQ ID NO:19:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Pro656Cys rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Taq Pol I\_Pro656Cys\_rev
5'-CGC CCG GCG CAT CAG Gca GTC CAC GGC CTC CCG-3'

- (2) INFORMATION FOR SEQ ID NO:20:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Leu657Cys fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leucine 657 to Cysteine Replacement

Taq Pol I\_Leu657Cys\_fwd
5'-GCC GTG GAC CCC tgc ATG CGC CGG GCC-3'

- (2) INFORMATION FOR SEQ ID NO:21:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid

- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: Synthetic DNA
- (ix) FEATURE:
  - (A) NAME/KEY: Taq Pol I Leu657Cys\_rev
  - (B) LOCATION:
  - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Taq Pol I\_Leu657Cys\_rev
5'-GGC CGC CCG GCG CAT gca GGG GTC CAC GGC-3'

- (2) INFORMATION FOR SEQ ID NO:22:
  - (i) SEOUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Tag Pol I Met658Cys\_fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cysmutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Methionine 658 to Cysteine Replacement

Taq Pol I\_Met658Cys\_fwd
5'-GCC GTG GAC CCC CTG tgt CGC CGG GCC-3'

- (2) INFORMATION FOR SEQ ID NO:23:
  - (i) SEOUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Met658Cys\_rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Taq Pol I\_Met658Cys\_rev
5'-GGC CGC CCG GCG aca CAG GGG GTC CAC GGC-3'

- (2) INFORMATION FOR SEQ ID NO:24:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: Synthetic DNA
- (ix) FEATURE:
  - (A) NAME/KEY: Taq Pol I Arg659Cys fwd
  - (B) LOCATION:
  - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Arginine 659 to Cysteine Replacement

Taq Pol I\_Arg659Cys\_fwd
5'-GCC GTG GAC CCC CTG ATG tGC CGG GCG GCC AAG ACC-3'

- (2) INFORMATION FOR SEQ ID NO:25:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Arg659Cys\_rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cysmutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Taq Pol I\_Arg659Cys\_rev
5'-GGT CTT GGC CGC CCG GCa CAT CAG GGG GTC CAC GGC-3'

- (2) INFORMATION FOR SEQ ID NO:26:
  - (i) SEOUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I Arg660Cys fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Arginine 660 to Cysteine Replacement

Taq Pol I\_Arg660Cys\_fwd
5'-GAC CCC CTG ATG CGC tGc GCC AAG ACC ATC-3'

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: bases
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: Synthetic DNA
- (ix) FEATURE:
  - (A) NAME/KEY: Taq Pol I\_Arg660Cys\_rev
  - (B) LOCATION:
  - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Taq Pol I\_Arg660Cys\_rev
5'-GAT GGT CTT GGC CGC gCa GCG CAT CAG GGG GTC-3'

- (2) INFORMATION FOR SEQ ID NO:28:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Ala661Cys\_fwd
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Taq DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Alanine 661 to Cysteine Replacement

Taq Pol I\_Ala661Cys\_fwd
5'-CCC CTG ATG CGC CGG tgc GCC AAG ACC ATC AAC-3'

- (2) INFORMATION FOR SEQ ID NO:29:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: bases
    - (B) TYPE: nucleic acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY: linear
  - (ii) MOLECULE TYPE: Synthetic DNA
  - (ix) FEATURE:
    - (A) NAME/KEY: Taq Pol I\_Ala661Cys\_rev
    - (B) LOCATION:
    - (D) OTHER INFORMATION: used to introduce cys mutation into Tag DNA pol I coding sequence.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Taq Pol I\_Ala661Cys\_rev
5'-GTT GAT GGT CTT GGC qca CCG GCG CAT CAG GGG-3'

- (2) INFORMATION FOR SEQ ID NO:30:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Cys Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:31:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ala Ser Trp Met Cys Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:32:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase
  - (ix) FEATURE:

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- (A) NAME/KEY:
- (B) LOCATION:
- (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ala Ser Trp Met Phe Gly Cys Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:33:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Ala Ser Trp Met Phe Gly Val Pro Arg Cys Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:34:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Cys Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658

Arg Arg Ala 659 660 661

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- (2) INFORMATION FOR SEQ ID NO:35:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Cys Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:36:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Cys Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:37:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:

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- (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
- (ix) FEATURE:
  - (A) NAME/KEY:
  - (B) LOCATION:
  - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Cys Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:38:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Cys Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:39:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

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Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Cys 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:40:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Cys Arg Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:41:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Cys Ala 659 660 661

- (2) INFORMATION FOR SEQ ID NO:42:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:

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- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY:
- (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
- (ix) FEATURE:
  - (A) NAME/KEY:
  - (B) LOCATION:
  - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 Arg Arg Cys 660 661

- (2) INFORMATION FOR SEQ ID NO:43:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Cys Thr Ser Ala Ala Val 513 514 515 516 517 518

- (2) INFORMATION FOR SEQ ID NO:44:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Ser Cys Ser Ala Ala Val 513 514 515 516 517 518

- (2) INFORMATION FOR SEQ ID NO:45:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Thr Cys Ala Ala Val 513 514 515 516 517 518

- (2) INFORMATION FOR SEQ ID NO:46:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of *Taq* DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Ser Thr Ser Cys Ala Val 513 514 515 516 517 518

- (2) INFORMATION FOR SEQ ID NO:47:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of Taq DNA polymerase

- (ix) FEATURE:
  - (A) NAME/KEY:
  - (B) LOCATION:
  - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Ser Thr Ser Ala Cys Val (513 514 515 516 517 518

- (2) INFORMATION FOR SEQ ID NO:48:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH:
    - (B) TYPE: amino acid
    - (C) STRANDEDNESS: single
    - (D) TOPOLOGY:
  - (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA polymerase
  - (ix) FEATURE:
    - (A) NAME/KEY:
    - (B) LOCATION:
    - (D) OTHER INFORMATION: polypeptide region of Taq DNA polymerase containing mutation for tag attachment.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Ser Thr Ser Ala Ala Cys 513 514 515 516 517 518